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10/524,702	10/13/2005	Eckard Steiger	10191/4158	1388

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EXAMINER	
SINGH, HIRDEPAL	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/524,702	STEIGER ET AL.	
	Examiner	Art Unit	
	HIRDEPAL SINGH	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 September 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *14,15,17-26 and 28-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *14,15,17-26,28 and 29* is/are rejected.

7)☒ Claim(s) *30-34* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the amendment filed on September 04, 2009. Claims 14, 15, 17-26 and 28-34 are pending and have been considered below.

Response to Arguments

2. Applicant's arguments filed September 04, 2009 have been fully considered but they are not persuasive.

3. Applicant argues that "…the "Mason" reference plainly does not disclose the feature in which the *transmitted data has at least one error bit and at least one status bit* … " (Remarks page 6).

4. Response, It is respectfully pointed out that the cited prior art references disclosed the claimed features and Mason discloses that the data transfer between sensor and processor has some sort of bits to send/receive information about the valid or invalid data and the state or mode of operation and further a secondary references is used to elaborate that these bit be error/status bits, rendering the arguments moot.

5. Applicant's argument that "Karasawa reference simply does not disclose that the transmitted data includes at least one status bit" (Remarks page 6), is respectfully traversed as clearly described by Karasawa the data transfer between the processor and sensors as shown in figure 4 includes error bit (see paragraphs 0061-0062, 0088) and further describes that data represent state of the components as in paragraphs 0063 and 0071. that makes it clear that the reference shows the claimed features.

6. The argument offered by Applicant regarding Tetreault that it " reference merely indicates a bus interface logic 38 that generates a bus status signal... the "Tetreault" reference does not disclose that the transmitted data includes at least one error bit and at least status bit…" (Remarks, page 7), is respectfully traversed as the Prior art references Tetreault discloses the sensor sends or transfer data regarding the state of the device to device register 62 in figure 4, i.e. data is transferred regarding the state or status of the device and further the error bit is received form detectors 44 and 46 in figure 4, may be controlled by sensors or controlled for further action (see paragraphs 0028-0029).

7. From the above discussion it is clear that the rejection shows the argued features of the claims, therefore is upheld.

Claim Objections

8. Claims 30-34 are objected to because of the following informalities: In the amendment filed September 04, 2009 claims 30-34 are listed as new claims. However in the previous claims a claim numbered 30 was present with a different limitation regarding status bit, but this amendment did not cancel that claim 30 nor does it say that the claim 30 is an amended claims. For the purpose of examination it is treated as previous claim 30 is canceled and new claims 31-35 (wrongly numbered as 30-34) are added.

9. Appropriate correction is required.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mason et al. ("A Generic Multielement Microsystem for Portable Wireless Applications" Proceeding of IEEE, VOL 86, No 8, August 1998) in view of Karasawa et al. (US 2002/0051225).

Regarding claim 14:

Mason discloses a system comprising;

a housing with a variety of sensors and microcontrollers (fig1; page 1733,column1, lines 1-5);

a processor/controller connected to front end sensors through sensor bus (fig 1; page 1733,column 1, lines 2-6);

a sensor situated in the housing (for measuring temperature, humidity, acceleration i.e. inertial sensor) (page 1733, column 1, lines 4-12);

data transmission between the "smart" sensor and the processor/controller is in digital form (fig 2(d); page 1733, introduction: paragraph 1; page 1744, column 2, lines 10-14).

Mason discloses all of the subject matter as described above and further discloses that sensor data is transferred based on the data valid signal (page 1737, figure 5, and part under title “A Standard Sensor Bus”) in other words when the data is without an error this signal is similar to an error signal, and also discloses the mode of operation as sleep mode and normal mode, the system wakes up in case of an interrupt (page 1735, column 2, lines 1-10), and the system keep track of shock or vibration in the sleep mode (page 1741, column 1, paragraph 3), from the above it is clear that the data transfer between sensor and processor has some signal or bit in a signal or pulse in a signal waveform to send/receive information about the above valid or invalid data and the state or mode of operation; but to further make the rejection clear another reference is brought in to show, the data transmission is configured in such a way that transmitted data has at least one error bit and at least one status bit, the at least one error bit enabling detection and identification of data transmission errors, and the at least one status bit enabling recognition of an operating state of the at least one inertial sensor.

Karasawa, in the same field of endeavor discloses a control system and method for processing the received data where the data is transmitted between sensor and processor (figure 4; paragraphs 0061-0062) in data transmission the data has at least one error bit (abstract; paragraphs 0014 and 0088) and data represent state of the components (paragraphs 0063 and 0071).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the data transmission including error bit and status bit as

suggested by Karasawa in the Mason system to identify any fault or malfunctioning or error in the data transmission and to check the state or status or mode of the peripheral devices connected to the system and the system bus in order to check the status data or mode data that enables the system processor to keep track of the operation of the devices and sensors or other hardware in the system and makes the controller to know when the devices are sending data and when the bus is idle or free so the processor can send a command when the components of the system are free and to change the mode of operation if the given component is not working properly because of overheating or some other possible problem as in the software and also advantageously prevent the system failure just because of one error in data due to a device failure or a software error and to compensate for that or to implement safety measures as to issue a warning or alarm or if the data is totally corrupted send a request to get new data, so overall improve the system performance, avoid the total failure even in the case of one of the device is not operable and makes the control easy, by the use the portable, low power consuming i.e. mode or state changing, less interferences prone and highly efficient system.

12. Claims 14-15 and 17-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mason et al. ("A Generic Multielement Microsystem for Portable Wireless Applications" Proceeding of IEEE, VOL 86, No 8, August 1998) in view of Tetreault (US 2002/0194548).

Regarding claim 14:

Mason discloses a system comprising;

a housing with a variety of sensors and microcontrollers (fig1; page 1733,column1, lines 1-5);

a processor/controller connected to front end sensors through sensor bus (fig 1; page 1733,column 1, lines 2-6);

a sensor situated in the housing (for measuring temperature, humidity, acceleration i.e. inertial sensor) (page 1733, column 1, lines 4-12);

data transmission between the "smart" sensor and the processor/controller is in digital form (fig 2(d); page 1733, introduction: paragraph 1; page 1744, column 2, lines 10-14).

Mason discloses all of the subject matter as described above and further discloses that sensor data is transferred based on the data valid signal (page 1737, figure 5, and part under title "A Standard Sensor Bus") in other words when the data is without an error this signal is similar to an error signal, and also discloses the mode of operation as sleep mode and normal mode, the system wakes up in case of an interrupt (page 1735, column 2, lines 1-10), and the system keep track of shock or vibration in the sleep mode (page 1741, column 1, paragraph 3), from the above it is clear that the data transfer between sensor and processor has some signal or bit in a signal or pulse in a signal waveform to send/receive information about the above valid or invalid data and the state or mode of operation; but to further make the rejection clear another reference is brought in to show, the data transmission is configured in such a way that transmitted data has at least one error bit and at least one status bit, the at least one

error bit enabling detection and identification of data transmission errors, and the at least one status bit enabling recognition of an operating state of the at least one inertial sensor.

Tetreault, in the same field of endeavor discloses a system and method for computer bus error termination where the data is transmitted between sensor and processor/controller (34, 48, 62, 66 and 68 in figure 4) data transmission is configured in such a way that transmitted data has at least one error bit (paragraph 0038) and at least one status bit (paragraph 0019), the at least one error bit enabling detection and identification of data transmission errors (figure 3; paragraphs 0029 and 0038, the first bit indicate the first type of error and second bit may indicate different error), and the at least one status bit enabling recognition of an operating state of the at least one inertial sensor (paragraphs 0019, 0028, the state of the system devices i.e. working or broken and state of bus i.e. busy or idle are given as examples).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the data transmission including error bit and status bit as suggested by Tetreault in the Mason system to identify any fault or malfunctioning or error in the data transmission and to check the state or status or mode of the peripheral devices connected to the system and the system bus in order to check the status data or mode data that enables the system processor to keep track of the operation of the devices and sensors or other hardware in the system and makes the controller to know when the devices are sending data and when the bus is idle or free so the processor can send a command when the components of the system are free and to change the

mode of operation if the given component is not working properly because of overheating or some other possible problem as in the software and also advantageously prevent the system failure just because of one error in data due to a device failure or a software error and to compensate for that or to implement safety measures as to issue a warning or alarm or if the data is totally corrupted send a request to get new data, so overall improve the system performance, avoid the total failure even in the case of one of the device is not operable and makes the control easy, by the use the portable, low power consuming i.e. mode or state changing, less interferences prone and highly efficient system.

Regarding claim 15:

Mason discloses all of the subject matter as described above and further discloses that the sensor bus has four lines for synchronous serial communication, and a standard interface between processor/controller and front end sensors (Page 1737,column 1, lines 11-14; page 1734, column 2, lines 20-24).

Regarding claim 17:

Mason discloses all of the subject matter as described above and further discloses that the data transmission is bidirectional i.e. the controller/processor sends read and write instructions to the sensors (page 1734, column 1, lines 32-39, and page 1737, column 1, lines 30-40).

Regarding claim 18:

Mason discloses all of the subject matter as described above and further discloses that the data transmission triggers the testing of sensors/devices within the system (page 1742, column 1, paragraphs 1 and 2).

Regarding claim 19:

Mason discloses all of the subject matter as described above and further discloses that the data transmission triggers the sensor offset regulation, switches it to different operating state (page 1737, column 1, last paragraph; and page 1742, column 1, last paragraph).

Regarding claim 20:

Mason discloses all of the subject matter as described above and further discloses the data transmission through synchronous serial lines with a chip select/enable line (page 1737, column 1, paragraph 1and 2).

Regarding claim 21:

Mason discloses all of the subject matter as described above, but doesn't explicitly disclose that the sensor has a multichannel design. However, since Mason sensors have multiple functions as measuring acceleration and or vibration, sending and receiving data through sensor data bus, coupled to the processor/controller through chip select/enable, and connected to the power supply etc, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use a multichannel sensor for the Mason system. One would have been motivated to use a multichannel design in order to optimize the disclosed communication with the processor/controller, and to enable Mason system to perform the multiple functions.

Regarding claim 22:

Mason discloses all of the subject matter as described above and further discloses that data transmission triggers the sensor from one operating state to another operating state (page 1737, column 1, paragraphs 1 and 2; and page 1742, column 1, paragraph 1 and 2).

Regarding claims 23-26:

Mason discloses all of the subject matter as described above and further discloses that this system could be used for environmental monitoring, temperature measurement, barometric pressure measurement, relative humidity measurement, and acceleration/vibration measurement, but doesn't explicitly disclose that the system is to be used as a part of a restraint system, vehicle dynamic control system, one of a sensor box and a sensor cluster, and a vehicle navigation system as claimed by the applicant.

However, the control system as a part of a restraint system, vehicle dynamic control system, one of a sensor box and a sensor cluster, and a vehicle navigation system are intended uses, but not a part of the claimed system. Therefore, little if any, patentable weight is given to the intended uses.

Furthermore, it would have been obvious to one having ordinary skill in the art at the time of invention to use the Mason system as a part of restraint system, vehicle dynamic control system, one of a sensor box and a sensor cluster, and a vehicle navigation system to use the portable, low power consuming, able to eliminate interferences and nonlinearities, and highly efficient system as a part of environmental monitoring, temperature measurement, barometric pressure measurement, relative

humidity measurement, acceleration/vibration measurement, a restraint system, vehicle dynamic control system, one of a sensor box and a sensor cluster, and a vehicle navigation system or the like.

13. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mason et al. ("A Generic Multielement Microsystem for Portable Wireless Applications" Proceeding of IEEE, VOL 86, No 8, August 1998) in view of Tetreault (US 2002/0194548) as applied to claim 14 above, and further in view of Perner (US 2002/0173930).

Regarding claim 28:

Mason discloses all of the subject matter as described above and further discloses running sensor test (page 1742, column 1, paragraph 1) except for specifically teaching that the status bit indicates running a sensor test. This is inherent that the sensor test is done by some kind of instruction by the processor which includes using a status data bit as suggested by Tetreault.

Perner, in the same field of endeavor discloses a system and method for determining operating temperature of a semiconductor component where the status bit indicates running a sensor test (paragraph 0007).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use the status bit of Perner in the Mason system to identify any fault in order to prevent the system failure just because of one error due to a device failure because of temperature and to compensate for that, also to avoid getting the corrupted

data from the device if it is not in proper order that helps improve system reliability avoid getting wrong information.

Regarding claim 29:

Mason discloses all of the subject matter as described above and further discloses the status bit indicates an offset regulation mode (page 1735, column 2, paragraph 1). This is inherent that the offset regulation mode is checked by some kind of mechanism by the system which includes using a status data bit as suggested by Perner.

Allowable Subject Matter

14. Claims 30-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcome any rejections or objections as set forth in this office action.

15. The following is a statement of reasons for the indication of allowable subject matter: The prior art of record disclose a system and method comprising a control unit where a data is transferred between sensors and processor including error and status bits, but prior art fails to disclose that the unit further comprise features of a serial synchronous interface for providing the data transmission where the data transmission is configured for at least to be bidirectional, triggering a sensor test, triggering a sensor-internal offset regulation of the at least one inertial sensor, triggering a switch-over from one operating state to another operating state of the at least one inertial sensor,

wherein four lines are provided for the data transmission, one of the lines being for selecting the at least one inertial sensor, and the at least one inertial sensor has a multi-channel design, and the status bit indicates one of a running sensor test, an offset regulation mode, and an initialization phase.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Steiger (US 7,375,623) discloses a system and method for monitoring a sensor.

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HIRDEPAL SINGH whose telephone number is (571) 270-1688. The examiner can normally be reached on Mon-Fri (Alternate Friday Off) 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. S./
Examiner, Art Unit 2611
/Shuwang Liu/
Supervisory Patent Examiner, Art Unit 2611